

**FORSPAN ASSESSMENT MODEL FOR CONTINUOUS
ACCUMULATIONS--BASIC INPUT DATA FORM (NOGA, Version 9, 2-10-03)**

IDENTIFICATION INFORMATION

| | | | |
|-------------------------|---------------------------------------|---------|-----------|
| Assessment Geologist: | R.M. Pollastro | Date: | 9/17/2003 |
| Region: | North America | Number: | 5 |
| Province: | Bend Arch-Fort Worth Basin | Number: | 5045 |
| Total Petroleum System: | Barnett-Paleozoic | Number: | 504501 |
| Assessment Unit: | Extended Continuous Barnett Shale Gas | Number: | 50450162 |
| Based on Data as of: | IHS (2003) | | |
| Notes from Assessor: | | | |

CHARACTERISTICS OF ASSESSMENT UNIT

Assessment-unit type: Oil (<20,000 cfg/bo) or Gas (\geq 20,000 cfg/bo), incl. disc. & pot. additions Gas

What is the minimum total recovery per cell? 0.02 (mmbo for oil A.U.; bcfg for gas A.U.)

Number of tested cells: 134

Number of tested cells with total recovery per cell \geq minimum: 78

Established (discovered cells): X Hypothetical (no cells): _____

Median total recovery per cell (for cells \geq min.): (mmbo for oil A.U.; bcfg for gas A.U.)

| | | | |
|--------------------|-------------|-------------|-------------|
| 1st 3rd discovered | <u>0.22</u> | <u>0.15</u> | <u>0.19</u> |
|--------------------|-------------|-------------|-------------|

Assessment-Unit Probabilities:

| <u>Attribute</u> | <u>Probability of occurrence (0-1.0)</u> |
|---|--|
| 1. CHARGE: Adequate petroleum charge for an untested cell with total recovery \geq minimum. | <u>1.0</u> |
| 2. ROCKS: Adequate reservoirs, traps, seals for an untested cell with total recovery \geq minimum. | <u>1.0</u> |
| 3. TIMING: Favorable geologic timing for an untested cell with total recovery \geq minimum. | <u>1.0</u> |

Assessment-Unit GEOLOGIC Probability (Product of 1, 2, and 3): 1.0

NO. OF UNTESTED CELLS WITH POTENTIAL FOR ADDITIONS TO RESERVES

1. Total assessment-unit area (acres): (uncertainty of a fixed value)

calculated mean 3,086,000 minimum 2,824,000 mode 3,138,000 maximum 3,295,000

2. Area per cell of untested cells having potential for additions to reserves (acres): (values are inherently variable)

calculated mean 53.3 minimum 10 mode 40 maximum 110

uncertainty of mean: minimum 35 maximum 65

3. Percentage of total assessment-unit area that is untested (%): (uncertainty of a fixed value)

calculated mean 99.8 minimum 99.7 mode 99.8 maximum 99.9

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**NO. OF UNTESTED CELLS WITH POTENTIAL FOR ADDITIONS TO RESERVES
(Continued)**

4. Percentage of untested assessment-unit area that has potential for additions to reserves (%):
(a necessary criterion is that total recovery per cell \geq minimum; uncertainty of a fixed value)

calculated mean 60 minimum 35 mode 55 maximum 90

Geologic evidence for estimates: 30% of area less than 200 ft of shale, thus less GIP.

Areas of major fault zones may result in problems due to calcite fracture fills and gas leakage along fractures.

TOTAL RECOVERY PER CELL

Total recovery per cell for untested cells having potential for additions to reserves:
(values are inherently variable; mmbo for oil A.U.; bcfg for gas A.U.)

calculated mean 0.34 minimum 0.02 median 0.2 maximum 5

AVERAGE COPRODUCT RATIOS FOR UNTESTED CELLS, TO ASSESS COPRODUCTS
(uncertainty of fixed but unknown values)

| Oil assessment unit: | minimum | mode | maximum |
|--------------------------------|-----------|-----------|-----------|
| Gas/oil ratio (cfg/bo) | _____ | _____ | _____ |
| NGL/gas ratio (bngl/mmcfg) | _____ | _____ | _____ |
| Gas assessment unit: | | | |
| Liquids/gas ratio (bliq/mmcfg) | <u>20</u> | <u>40</u> | <u>60</u> |

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SELECTED ANCILLARY DATA FOR UNTESTED CELLS

(values are inherently variable)

| Oil assessment unit: | minimum | mode | maximum |
|--|-----------------|---------|---------|
| API gravity of oil (degrees) | _____ | _____ | _____ |
| Sulfur content of oil (%) | _____ | _____ | _____ |
| Depth (m) of water (if applicable) | _____ | _____ | _____ |
| Drilling depth (m) | | | |
| minimum | F75 | mode | maximum |
| _____ | _____ | _____ | _____ |
| Gas assessment unit: | minimum | mode | maximum |
| Inert-gas content (%) | 0.50 | 2.50 | 20.00 |
| CO ₂ content (%) | 0.10 | 1.00 | 5.00 |
| Hydrogen sulfide content (%) | 0.00 | 0.00 | 0.00 |
| Heating value (BTU) | _____ | _____ | _____ |
| Depth (m) of water (if applicable) | _____ | _____ | _____ |
| Drilling depth (m) | | | |
| minimum | F75 | mode | maximum |
| 1500 | 2021 | 2200 | 3050 |
| Success ratios: | calculated mean | minimum | maximum |
| Future success ratio (%) | 68.3 | 50 | 90 |
| Historic success ratio, tested cells (%) | 58 | | |

Completion practices:

1. Typical well-completion practices (conventional, open hole, open cavity, other) conventional
 2. Fraction of wells drilled that are typically stimulated 1
 3. Predominant type of stimulation (none, frac, acid, other) water frac with sand
 4. Fraction of wells drilled that are horizontal 0.5
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ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO STATES
Surface Allocations (uncertainty of a fixed value)

1. Texas represents 100 area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ 100 _____

2. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

3. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

4. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

5. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

6. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

Assessment Unit (name, no.)
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7. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

8. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

9. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

10. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

11. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

12. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Assessment Unit (name, no.)
Extended Continuous Barnett Shale Gas, 50450162

ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO GENERAL LAND OWNERSHIPS
Surface Allocations (uncertainty of a fixed value)

1. Federal Lands represents 1.19 area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ 1.19 _____

2. Private Lands represents 98.81 area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ 98.81 _____

3. Tribal Lands represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

4. Other Lands represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

5. State 1 Lands represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

6. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

Assessment Unit (name, no.)
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7. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

8. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

9. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

10. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

11. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

12. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Assessment Unit (name, no.)
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ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO FEDERAL LAND SUBDIVISIONS
Surface Allocations (uncertainty of a fixed value)

1. Bureau of Land Management (BLM) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

2. BLM Wilderness Areas (BLMW) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

3. BLM Roadless Areas (BLMR) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

4. National Park Service (NPS) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

5. NPS Wilderness Areas (NPSW) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

6. NPS Protected Withdrawals (NPSP) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

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7. US Forest Service (FS) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

8. USFS Wilderness Areas (FSW) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

9. USFS Roadless Areas (FSR) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

10. USFS Protected Withdrawals (FSP) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

11. US Fish and Wildlife Service (FWS) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

12. USFWS Wilderness Areas (FWSW) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

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13. USFWS Protected Withdrawals (FWSP) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

14. Wilderness Study Areas (WS) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

15. Department of Energy (DOE) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

16. Department of Defense (DOD) represents 1.19 area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ 1.19 _____

17. Bureau of Reclamation (BOR) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

18. Tennessee Valley Authority (TVA) represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

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19. Other Federal _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

20. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Assessment Unit (name, no.)
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ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO ECOSYSTEMS
Surface Allocations (uncertainty of a fixed value)

1. Edwards Plateau (EDPT) represents 7.71 area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ 7.71 _____

2. Cross Timbers and Prairie (CRTP) represents 92.29 area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ 92.29 _____

3. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

4. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

5. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

6. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: Volume % in entity _____ _____ _____

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7. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

8. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

9. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

10. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

11. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

12. _____ represents _____ area % of the AU

Oil in oil assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____

Gas in gas assessment unit: minimum mode maximum
Volume % in entity _____ _____ _____
